1. Mark your confusion.
2. Show evidence of a close reading.
3. Write a 1+ page reflection.

The Wasted Potential of Garbage Dumps

Toxic landfills are emblems of environmental injustice across the US. Clean energy can remake them.

Source: by Neel Dhanesha, Vox.com, October 24, 2022

About 17 miles south of downtown Houston, Texas, on the western edge of a majority-Black neighborhood called Sunnyside, there is an unkempt-looking patch of trees. To a visitor driving down Belfort Avenue or Reed Road, which serve as the trees' boundaries to the north and south, they might look like a rare patch of urban forest in the city, or perhaps an extension of nearby Sunnyside Park.

But the trees are not the remnants of an old forest that survived Houston's hungry sprawl, nor are they the kind of green space that arises from careful public planning.

"These are trash trees," said Efrem Jernigan, a lifelong resident of Sunnyside and president of South Union CDC, a local community development nonprofit. Jernigan means that literally: They're growing on top of a 240-acre patch of land that used to be an active landfill.

"For 40 to 50 years, white Americans came here and dumped on Black Americans," said Jernigan. Once the site of Houston's largest trash incinerator, the landfill was closed in the 1970s, after residents protested the death of an 11-year-old boy there in 1967. In the decades since, the trees have been the only things to find any use for the site.

That's about to change. This year, work will begin to cut those trees down and replace them with solar panels, creating a 52-megawatt solar farm and revitalizing a site that has long served as little more than a reminder of the injustices of the past. When it's completed, it will join a growing list of landfill-to-solar projects across the United States that have the potential to help propel underserved communities to the forefront of the clean energy future.

It's the sort of creative solution that we'll need more of in the future. The climate crisis will require taking advantage of every source of clean energy we can find, and a 2021 report from RMI, a clean energy think tank, estimates that landfill solar projects like the one in Sunnyside have the potential to generate at least 63.2 gigawatts of power across the US — enough energy for 7.8 million American homes, or the entire state of South Carolina. If the idea is scaled up across the country, it can help undo two kinds of harm at once.

Of the many injustices wrought on communities of color by those in power, landfills are quite literally the textbook example. In the 1990 book *Dumping in Dixie*, one of the first works to outline the concept of environmental justice, sociologist Robert Bullard found that many landfills, including the one in Sunnyside, were systematically placed in majority-Black neighborhoods across the country.

Little has changed since the book was published; race continues to be one of the biggest factors in determining whether a person lives near a source of pollution in the United States. Residents of neighborhoods with landfills are saddled with the sights, sounds, and smells of landfills while they're active; after they are decommissioned, they become dead space, eyesores at best and long-lasting sources of toxic pollution at worst.

"Landfills are complicated sites to work with for most types of economic redevelopment," said Matthew Popkin, a manager in the urban transformation program at RMI and co-author of a paper on landfill solar. Inactive landfills are supposed to be capped or covered with soil so that no pollutants can escape, but regulations for landfill capping vary by municipality and state. And closed landfills can be precariously porous, especially as they settle over time; most types of building activity on these sites risk puncturing the cap, which would allow gases and other pollutants to escape.

There are many such contaminated industrial sites across the country. Together, inactive landfills, mines, and industrial sites make up a category of land the EPA calls "brownfields." Cleaning up those sites and repurposing them for clean energy turns them into "brightfields."

Popkin thinks landfill solar is especially exciting, in part because it's one of the rare forms of reuse for a landfill that's actually quite safe: The solar panels can be built on top of concrete stands, called ballasts, that distribute their weight like snowshoes and keep the cap intact. And because landfills are often controlled and owned by municipalities, local communities can have more of a say in how they're reused — a stark contrast to the often undemocratic processes by which those landfills ended up in those communities to begin with.

Landfill solar projects have the potential to generate energy for millions of American homes

In their report, Popkin and his co-author, Akshay Krishnan, identified 4,314 landfills across the country that would make good candidates for landfill solar. Together, those landfills could generate 63.2 gigawatts of power, or 83.3 terawatt-hours of energy each year. And that's just the beginning; there are over 10,000 closed and inactive landfills in the country, many of which they were unable to study. As of 2019, there were only 126 landfill solar sites across the country, mainly in the northeast.

"There's an opportunity here for partially correcting some environmental injustices," Popkin said. While landfill solar on its own can't correct for systemic problems, "it can be part of a broader revitalization strategy."

In Sunnyside, for instance, the landfill solar project is being paired with a jobs program. Residents from surrounding communities will be able to enroll in a 10-week solar installation training program and use those skills to help clear the landfill and build the new solar farm on the site. Afterward, Jernigan said, some of those residents will have the opportunity to stay on to maintain the solar farm; those who don't will be well-suited to finding jobs in Texas's burgeoning solar market, and the training program will continue to run every quarter.

Alongside the 50 megawatts of solar power that the Sunnyside solar project will send to the grid — making it the largest urban solar farm in the country — about 2 megawatts will go to a community solar project that is mostly reserved for Sunnyside residents, which could potentially help reduce their electricity costs. And a nearby parcel of land will house a 150-megawatt battery storage facility to store excess solar power and send it to the grid during times of high demand, helping prevent a blackout similar to the one Texas experienced in February 2021. To allay local fears of the project breaking the landfill's cap and causing outgassing, environmental sensors will be placed around the perimeter of the solar farm to monitor for any leaks.

But with the prospect of revitalization comes the specter of gentrification. Popkin hopes landfill solar can buck that trend, in part because little else can be done with the land — in other words, revitalizing the landfill won't mean there's suddenly new space for high-rise apartments or organic grocery stores. Instead, the hope is that the economic benefits of the solar project, like jobs training and lower energy costs through community solar, will stay within the community, while also providing an intangible boost to residents' day-to-day lives by replacing the eyesore of a landfill with something the community can take ownership of.

"It was usually people who were disadvantaged who didn't have a say in what went in their backyard," Popkin said. Landfill solar can change that paradigm. "It brings attention to a site that has been underutilized or abandoned. That has intrinsic value. Communities can say 'Hey, people care about us again.'"

For communities with landfills sitting around, landfill solar is an easy, low-maintenance solution that comes with some tangible benefits.

"Solar panels are good neighbors because they don't make any noise," said Kevin Cafferty, director of the Department of Public Works for the town of Scituate, Massachusetts, which in 2013 turned a landfill into a solar farm generating 3 megawatts of power. The town receives credits for the electricity sent to the grid from the landfill solar farm and puts those credits toward the energy used by its water and sewage treatment plants, which in turn leads to lower water and sewage bills for taxpayers. What was once dead space is now a productive, if small, source of clean energy.

But landfill solar projects don't come easy or cheap. As waste settles inside a landfill, the ground above it shifts, which could make siting a solar project difficult, and developers have to be careful not to place their solar infrastructure where it might interfere with existing structures, like monitoring and gas collection systems. Because landfill capping regulations vary across the country, a landfill may need a new cap before a solar project can even be discussed.

Before the Inflation Reduction Act (IRA) passed, generating the potential 63.2 gigawatts of power from solar panels on former landfills might have been a bit of a pipe dream. Landfill solar requires going through a different permitting process than a solar development on a site without any prior contamination does — and that process stretches timelines into the space of years before construction can even begin. Additionally, building the concrete ballasts for the solar panels to sit on adds to the cost of the project.

But the IRA includes millions of dollars in funding and tax breaks for both brownfields and clean energy projects in low-income communities, which the act calls "energy communities." Solar projects in low-income communities, for example, come with a 10 percent tax credit for developers, and over half of the IRA's funding is prioritized for investments in disadvantaged communities. Put the funding and tax breaks together, says Popkin, and the act could spur landfill solar development across the country in an unprecedented way.

"Suddenly, you have a national incentive to build these projects," Popkin said. "And these incentives can be stacked." That gives local communities and developers alike a reason to pay new attention to abandoned landfills.

Community members can look to landfill solar as a way to revitalize the space, and developers stand to reap significant financial rewards for partnering with those communities. If a landfill is improperly capped or emitting pollution of some sort, landfill solar could be a good way to fix those problems and transform the space into something new.

"We're turning the negative of this landfill into a positive," Jernigan said. "I hope our successes can be replicated across communities of color to bring about good. It should make the community a place of sunshine."

Possible Response Questions

- What are your thoughts about environmental injustice? Can you think of other examples?
- What are your thoughts about remaking toxic dumps into solar farms? Explain.
- Did something in the article surprise you? Discuss.
- Pick a word/line/passage from the article and respond to it.
- Discuss a "move" made by the writer in this piece that you think is good/interesting. Explain.